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Ypsolopha alpella ([Denis & Schiffermüller], 1775) (Lepidoptera, Ypsolophidae), a new record for the Asian continent

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Abstract: *Ypsolopha alpella* ([Denis & Schiffermüller], 1775) (Lepidoptera, Ypsolophidae), a new record for the Asian continent. Misc.Pap. 224: 1-6.
The present study documents the first Asian record of *Ypsolopha alpella* and provides preliminary evidence of its occurrence within the Irano-Turanian phytogeographical region of southeastern Türkiye. The single male specimen is illustrated together with its genitalia and associated habitat imagery. Morphological distinctions, habitat features, and ecological patterns of this species are assessed and compared with closely related congeners.

Keywords: Asian continent, morphology, new record, Türkiye, *Ypsolopha alpella*.

Introduction

This paper presents the first record of a species of the genus *Ypsolopha* Latreille, [1796], for the Asian continent. It also documents a new addition to the existing *Ypsolopha* species in Türkiye. While 21 species of this genus have been reported in the Turkish fauna (Koçak & Kemal, 2018), Jin et al. (2013) recognized 140 species globally, and the updated synthesis by Bánki et al. (2025) elevated this number to 141.

The results of the initial investigations conducted between 2008 and 2014 in the Şirvan district of Siirt Province, aimed at determining the lepidoptera and other insect fauna of the region, were presented in several important articles (Kemal & Koçak, 2008; Kemal & Seven, 2008; 2013; Koçak, Kemal & Seven, 2010; Kemal, Seven & Koçak, 2013; Seven, 2014). Following these early contributions, subsequent surveys expanded both the taxonomic scope and spatial resolution of faunistic research in the Şirvan district. Continued fieldwork enabled the documentation of additional Lepidoptera assemblages, refinement of locality-based species records, and integration of ecological observations that strengthened the regional biodiversity profile. Through these successive investigations, research activity in Şirvan has progressed in a sustained manner, contributing to an

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increasingly comprehensive understanding of the district's insect fauna (Seven, Kemal & Koçak, 2015; Akın & Seven, 2017; Seven, 2022). Morphological characteristics and genital structure of a male specimen obtained from the material collected during this period were examined, and it was identified as *Ypsolopha alpella* (Corley et al., 2019: 559; Lepiforum e.V.) This species was originally described by Denis & Schiffermüller from Vienna, Austria, in 1775 and had been recorded exclusively in Europe until now.

Materials and Methods

The material examined in this study was collected using a UV light trap at night from the mountain steppe in the Şirvan district of Siirt Province, southeastern Türkiye, in June 2013. The light trap consisted of a UV-emitting fluorescent tube powered by a battery and current converter, enclosed by a cylindrical transparent box and equipped with an ethyl-acetate killing chamber. The device was installed at an appropriate site in the field shortly before dusk and retrieved in the early morning hours prior to sunrise. In the laboratory, the material was prepared following standard museum curation procedures to produce permanent reference specimens.
Photographic documentation of the species' habitat encompassing the surrounding vegetation structure, microhabitat features, and general landscape context is provided in Figures 1-3. Genital structures were dissected following the procedure of Robinson (1976), and permanent preparations were mounted in Euparal. Habitus images of the collected specimen were taken with a Canon EOS 70D, while genitalia were photographed using a Leica S8APO stereomicroscope equipped with a DFC290 digital camera (Figs. 4, 5). Photographs were taken by the first author. The examined specimen is preserved in the Cesa Collection.

Figure 1. General view of the mountain-steppe habitat of *Ypsolopha alpella* in Nallıkaya Village, Şirvan District, Siirt Province; *Astragalus*-dominated steppe, 1940 m, 30 May 2013.

Figure 2. Microhabitat structure of *Ypsolopha alpella* at the same locality as Fig. 1; *Astragalus*-dominated steppe, 1940 m, 30 May 2013.

Figure 3. Prof. Dr. Ahmet Ömer Koçak during fieldwork in the same habitat and date.

Results

***Ypsolopha alpella* ([Denis & Schiffermüller], 1775)** (Figs. 4-5, Tab. 1)
Synonym(s): *alpella [Denis & Schiffermüller], 1775; alpinus Fabricius, 1798*
Original Reference: Tinea alpella [Denis & Schiffermüller], 1775, Ankündung syst. Werkes Schmett. Wienergegend: 135. Type(s): Vienna district.
Diagnosis: The antennae are brown and light cream checkered, the vertex scales are light yellow. The forewing base to apex is 8 mm, and the wingspan is 18 mm. The yellow ground color of the forewing of the examined male specimen, the pair of sparse brown scaly transverse bands extending from the anal margin to the anal vein, the arcuate patterning, and the color of the double-layered cilia are also similar to those of *Ypsolopha alpella*. The shape of the male genital valve, the distinct rib-like thickening of the costal margin, the short, spiny protrusion at the apex, the gnathos, the sacculus and the aedeagus are also congruent with the diagnostic characters of this species.
Material examined: Türkiye, Siirt Prov., Şirvan District, Nallıkaya-Dikilitaş (56Fsl), 1940 m, 30.VI.2013, M. Kemal, E. Seven & A.Ö. Koçak leg.
Habitat: Mountain steppe, *Astragalus* formation.
Distribution: Europe (Koçak & Kemal, 2015), Crete (Greece) (Huemer et al., 2015)
Distribution in Türkiye: Southeastern Anatolia Region, Siirt Province (Şirvan District).

Discussion

The separation of *Ypsolopha alpella* from *Y. persicella* relies on a coherent set of external morphological characters that consistently distinguish the two taxa. In *Y. persicella*, the antennal segments display a grey–light-yellow chequered pattern; *Y. alpella* instead exhibits a brown–light-cream configuration. The vertex of *Y. persicella* carries yellow scales matching the forewing ground color, whereas *Y. alpella* possesses a distinctly whitish vertex. The forewing of *Y. persicella* bears a greenish-yellow double oblique band beginning at the anal margin and extending beyond the anal vein; in *Y. alpella*, this band consists of sparse brown scaling and terminates before reaching the anal vein. The inner band of *Y. persicella* advances toward the costal margin and continues distally in a sinuate course toward the apex, and the outer band shows an abrupt angular deflection returning to the anal margin. The hindwing cilia of *Y. persicella* are uniformly white, contrasting with the brown cilia characteristic of *Y. alpella* (Table 1).

Table 1. Diagnostic comparison of *Ypsolopha alpella* and *Y. persicella* based on external morphological characters.

Character	***Ypsolopha alpella***	***Ypsolopha persicella***
Antennal pattern	Brown–light cream	Grey–light yellow
Vertex color	Whitish	Yellow, matching forewing ground color
Forewing oblique band	Brown-scaled; stops before the anal vein	Greenish yellow; extends beyond the anal vein
Inner band direction	Does not reach the costal margin	Extends toward the costal margin and curves toward the apex
Outer band shape	No sharp angular break	Distinct angular break returning to the anal margin
Hindwing cilia	Brown	White

Ecological notes: During his studies in Amasya, Staudinger (1879: 288–289) reported *Ephedra* (Ephedraceae) as the larval host plant of *Ypsolopha manniella* and *Y. sculpturella*. Another congeneric species, *Ypsolopha ustella*, has been recorded in Türkiye feeding on *Quercus pubescens* (Çalışkan & Aytaç, 2025), although occasional larval occurrences on *Populus tremula* and possibly on *Salix* species have also been documented (Lepiforum e.V.). In contrast, European populations of *Ypsolopha alpella* utilize *Quercus cerris* and *Q. pubescens* as host plants (Kulfan et al., 2006; 2018).

The detection of *Ypsolopha alpella* in the mountain steppe of southeastern Türkiye - an environment dominated by *Astragalus* (Fabaceae) rather than oaks-reveals that the species occupies an ecological setting distinctly different from the oak woodlands supporting its European populations. European records show *Y. alpella* occurring predominantly below 500 m within low-elevation *Quercus* habitats, whereas the Turkish specimen was found near 2000 m, indicating a marked shift in its elevational range. A comparison with congeners reinforces this contrast: *Y. ustella* is tied to lowland *Quercus* species, *Y. persicella* to low-elevation orchards of *Prunus dulcis* and *P. persica*, and *Y. manniella* and *Y. sculpturella* to *Ephedra* shrubs typically occurring below 500 m (Staudinger, 1879; Lepiforum e.V.).
Within this broader context, the presence of *Ypsolopha alpella* at ~2000 m in southeastern Türkiye represents the only high-altitude record known for the genus. This elevational divergence from its established European distribution suggests that *Y. alpella* may have a wider ecological tolerance than previously documented, potentially including variation in larval host-plant use across its geographical range.

Distribution overview: *Ypsolopha persicella* is widely distributed across continental Europe and extends into Asian Türkiye and Iran, which positions it as a typical Euro-Irano-Turanian species. In contrast, *Ypsolopha alpella* was formerly known exclusively from Europe, encompassing regions of central, western, northern, and southern Europe, including Mediterranean islands (Lepiforum e.V.). The recent detection of *Y. alpella* in southeastern Türkiye (Siirt Province) notably extends its range into the westernmost part of Asia. Given its occurrence within the Irano-Turanian phytogeographical region—and the continuity of similar mountain-steppe habitats into western Iran-the possibility that *Y. alpella* also occurs in Iran merits serious consideration.
Furthermore, the absence of previous records from the Asian continent, combined with the species' occurrence in the Irano-Turanian phytogeographical region rather than in Türkiye's Euro-Siberian transition zones, may reflect insufficient faunistic sampling in these interior regions or the species' previous oversight. Given these factors, it is reasonable to expect that expanded and methodologically intensive surveys across adjacent Irano-Turanian landscapes may further refine, and potentially broaden, the currently known distributional limits of the species.

Figure 4. Habitus of *Ypsolopha alpella*.

Figure 5. Male genitalia (GP2144) of *Ypsolopha alpella*.

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